Patent
Docket No.: 1200320WO

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
IPEA/EP

In re Application of:

POLYONE CORPORATION, Stephen HORTON, Roger AVAKIAN, and John HORNICKEL

Serial No.: PCT/US2004/035250
Filed: 22 October 2004 (22.10.2004)

Examiner: Unknown

For: CATHODIC PROTECTION COATINGS CONTAINING CARBONACEOUS CONDUCTIVE MEDIA

VIA FAX:
(49-89) 2399-4465

Article 34 Amendment

PCT IPEA
c/o European Patent Office
Erhardtstr. 27
D-80331 München
Germany

Dear Sir:

Introductory Comments

In conjunction with the Demand for International Preliminary Examination and in response to the Written Opinion dated November 11, 2004, Applicants amend their claims and submit replacement pages 22-24 and remarks.

With all rejections successfully traversed, Applicants seek a Positive International Preliminary Report on Patentability.

Remarks

Claims 1-18 were amended only to remove any multiple dependencies. Claim 19 was amended to correct dependency as identified in Section VIII of the Written Opinion dated 23 March 2005.

Claims 1-19 are novel over D1 and D2 because neither D1 nor D2 discloses any use of a metallic particle that is less noble than the metal substrate to be protected. Claim 1, from which all other claims depend directly or indirectly, requires "sacrificial metal particles" which is explained in the description of the application to occur when the metal particles are sacrificial anodes. Please see the description beginning on page 5, line 27. As the Search Examiner identified, D1 and D2 disclose precious metals as particles in their respective systems. D1 concerns a polymer electrode containing *catalytic* titanium particles. D2 concerns adding silver flakes to a conductive coating. Neither the titanium particles nor the silver flakes are meant to be sacrificed. Therefore, neither D1 nor D2 discloses *sacrificial* metal particles which all claims pending require.

In Section VIII, the Search Examiner stated aspect ratio to be an essential feature. This is incorrect. Please page 9, line 21 where a very large range of aspect ratios is disclosed as acceptable, from unity (spherical) to 20,000. Though there is a preference for elongate conductive media, it is not essential to have an aspect ratio greater than 1.

To encourage resolution of any issues about the pending claims, the IPEA Examiner is invited to contact the undersigned by telephone. Otherwise, Applicants request a Positive International Preliminary Report on Patentability.

Respectfully submitted by:

May 23, 2005

Date

PolyOne Corporation
33587 Walker Road
Avon Lake, Ohio 44012

John H. Hornickel
Registration No. 29,393
Telephone: 440-930-3317
Fax: 440-930-1179
John.Hornickel@PolyOne.com

What is claimed is:

1. A cathodic protection polymeric compound, comprising:

(a) flowable material;

(b) carbonaceous conductive media dispersed in the flowable material; and

(c) sacrificial metal particles also dispersed in the flowable material, wherein the sacrificial metal particles are less noble than a metal substrate to which the compound is intended to contact.

2. The compound of Claim 1, wherein the carbonaceous conductive media serve as a carbon-based electron transfer agent and are in the form of particles, platelets, fibers, tubes, or combinations thereof and optionally are functionalized with plating of metal.

3. The compound of Claim 1, wherein the carbonaceous conductive media are fibers.

4. The compound of Claim 1, wherein the tubes are multiple-walled nanotubes.

5. The compound of Claim 1, wherein the tubes are single-walled nanotubes.

6. The compound of Claim 1, wherein the flowable material is polymeric and is capable of forming a film or coating.

7. The compound of Claim 1, wherein the flowable material is a pressure sensitive adhesive.

8. The compound of Claim 1, wherein the metal substrate is iron-containing and the sacrificial metal particles are zinc or aluminum.

9. The compound of Claim 1, further comprising an ionically conductive agent in the flowable material.

10. The compound of Claim 9, further comprising a means for reducing passivation of the sacrificial metal particles.

11. The compound of Claim 10, wherein the means is a complexing agent.

12. The compound of Claim 1, further comprising an inherently conductive polymer in the flowable material.

13. A film formed from the compound of Claim 1.

14. A metal substrate having a surface to which the compound of Claim 1 is contacted.

15. A method of protecting a metal substrate, comprising the step of contacting the compound of Claim 1 with the metal substrate.

16. A method of using the compound of Claim 1, comprising applying the compound of Claim 1 to a metal substrate, wherein the compound and the metal substrate form a galvanic circuit in which the sacrificial metal particles are anodes and the metal substrate is a cathode and in which the carbonaceous conductive media serve as an electron transfer agent between the anodes and cathode.

17. The method of Claim 16, wherein the galvanic circuit is passive.

18. A method of making the compound of Claim 1, comprising the steps of mixing the carbonaceous conductive media into the flowable material and mixing the sacrificial metal particles into the flowable material.

19. The method of Claim 18, wherein the carbonaceous conductive media are present in an amount of from about 0.01 to about 10 weight percent of total solids of the flowable material, and wherein the sacrificial metal particles are present in an amount of from about 0.1 to about 95 weight percent of the total solids of the flowable material.